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ABSTRACT

A college admissions system model is described that can be used to monitor applicants at each stage of the admissions process and to assist in planning and student recruitment. Examples are provided that demonstrate the model's broad applicability for the development of specialized admissions programs that can be targeted to accomplish institutional goals such as increasing overall Scholastic Aptitude Test (SAT) scores, raising enrollments in major fields of study, and improving out-of-state enrollments. The system consists of the following stages: application, admission by the college, acceptance by the student, and enrollment. A flow model that displays the continuation patterns of students through the admissions system is constructed by collecting data on the number of students who persist at each stage of the system from application stage to enrollment stage. Definition of the observed student population is provided by grouping average SAT scores for first-time, full-time freshmen at 50 point intervals and, subsequently, following each group through the successive stages of the admissions system. The following data elements may be used: type of applications (freshman, transfer); application status (applied, admitted, accepted, enrolled); SAT scores (verbal, mathematics); county and state of origin; and intended field of study. The four-stage model provides for the production of appropriate numerical counts and continuation ratios, which can enable an institution to accurately identify the changes that occur in the applicant pool between initial application and final enrollment. A bibliography is appended. (SW)

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An Admissions Model for Monitoring Applicant Quality

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THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

This paper was presented at the Twenty-First Annual Forum of the Association for Institutional Research held at the Leamington Hotel in Minneapolis, Minnesota, May 17-20, 1981. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Mary Corcoran
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(Editor, AIR Forum Publications)

Introduction

There is a broad consensus within the higher education community that the supply of traditional college-going students, which has been provided from the ranks of 18 year old high school graduates, will sharply decline in the next decade as a result of reduced birth rates of the 1960s and 1970s (e.g. Henderson, 1977; Centra, 1980). In New Jersey, for example, state higher education officials are predicting that the supply of high school graduates will diminish some 30 percent between 1980 and 1990 (Department of Higher Education, 1980).

As a result of the projected supply reduction, competition for students has greatly intensified as colleges and universities strenuously seek to maintain both acceptable enrollment levels and the "quality" of their students as measured by SAT scores.

The challenge of maintaining enrollments and of maintaining institutional "quality" has drawn considerable attention from numerous state departments and coordinating boards of higher education. Recently, as an illustration, New Jersey's Board of Higher Education adopted a statewide plan which included a provision requiring the state's public institutions to adhere to a baseline index in admitting new students.

The state's baseline index is a weighted mean value derived from verbal and math SAT scores and high school rank. The initial baseline value is established by merging the index for semesters over a three year period (1977-1979) in order to provide a more stable measure.

New Jersey's officials have indicated that budgetary support would be related to how well institutions performed in meeting their respective baseline recruitment index. This provides further evidence of how at least one state has viewed the seriousness of the declining supply pool of college-going students.

At the campus level the need to maintain enrollment levels and an acceptable measure of "quality" has forced colleges to develop and employ considerably strengthened admissions techniques and programs.

Much of the effort directed into college admissions programs has focused upon employing new "marketing" techniques to attract students (e.g. Litten, 1980). Advanced word processing equipment, professionally produced promotional literature, and the use of "expert" marketing consultants are common accouterments of today's "state of the art" admissions effort.

This paper does not address or suggest any new or state of the art ways to improve admissions marketing techniques. It provides, instead, a framework for utilizing the admissions process as a focus for improving and/or maintaining both the quantity and quality of students after a college's marketing program has produced results--that is, after the applicant "milestone" of the admissions system has been reached.

Admissions System

The admissions system is comprised of three discreet milestones or stages: application, admission, and acceptance.

These stages represent successively closer steps toward the final goal of the system which is enrollment which represents, in effect, the last stage of the system.

Institutions exercise admission discretion at the admitted stage; applicants exercise discretion at all other stages. By collecting, organizing, and analyzing student level persistence at each of the three stages of the system, college admissions offices can, as this paper will suggest, leverage the system to further enhance and meet institutional recruitment objectives.

Stage-to-Stage Model Explained

Before discussing how colleges can leverage the admissions system, it is first necessary to explain how the stage-to-stage model works. This explanation follows.

Model construction. A flow model which displays the continuation patterns of students through the admissions system is constructed by collecting data on the number of students who persist at each stage of the system from apply to enroll.

Definition of the observed student population is provided by grouping average SAT scores for first-time, full-time freshmen at 50 point intervals and, subsequently, following each group through the successive stages of the admissions system.

A sample of the format used to display this information is shown in Figure 1.

Sample Format

Stage-to-Stage Model

(1)	(2)	(3)		(4)		(5)		(6)
Av.Score Intervals	Apply #	Admit #	%	Accept #	%	Enroll #	%	Enroll/Admit %
				DATA				
Total								

Average score intervals. Column (1) groups average SAT scores for first-time/full-time freshmen in 50 point intervals: 200-245 through 750-795.

SAT scores were selected as an organizing focus for the model because they are widely used as admissions criteria (Quann, 1979), and have a high predictive validity regarding probable success in college (Buros, 1972; Goldman and Slaughter, 1976).

The average of verbal and mathematics scores should be utilized to compensate for possibly wide fluctuations in either verbal or mathematics test results. It ought to be noted, however, that the model permits any number of organizational reference points: separate grouping of verbal or mathematics scores, high school rank-in-class data, county of origin, and intended field of study--to name several additional possibilities.

Data elements necessary to implement the stage-to-stage model should be readily accessible from a college's student data base. In terms of the illustration provided in this paper, the following data elements were used: type of applications (freshman, transfer); application status (applied, admitted, accepted, enrolled); Scholastic Aptitude Test scores (verbal, mathematics); county and state of origin; and intended field of study.

Apply stage. The number of first-time/full-time freshmen applicants is shown in column (2). Applicant data are distributed along the SAT score interval continuum.

Admit stage. Column (3) displays the number of admitted applicants as distributed along the SAT score continuum. For each SAT interval the number of admitted students is shown as a proportion of applicants which represents the probability with which applicants in a given SAT interval were admitted.

Accept stage. The number of applicants accepting admission is shown in column (4) grouped along the SAT score continuum. For each SAT score interval the number of accepted students is provided as a proportion of admitted students. These data represent the probability with which admitted students in a given SAT interval accepted a college's offer of admission.

Enrolled stage. The number of accepted students who enroll as first-time/full-time freshmen is shown in column (5) grouped along the SAT score continuum. The number of enrolled students is shown for each SAT interval as a proportion of

accepted students. This number represents the probability with which accepted students in a given SAT interval actually enroll.

Enroll/admit ratio. Column (6) displays the number of enrolled students as a proportion of admitted students. This number represents the probability with which admitted applicants in a given SAT score interval ultimately enroll.

Model Use

Table 1 provides an illustration of how data for the stage-to-stage model might be displayed for a selected college.

This table shows the number and proportion of students grouped by interval range, at each stage of the admissions system. From this table, for example, one can see that there were 231 applicants in the 500-545 SAT interval. Of this amount, 211, or a ratio of .91, were admitted and 99, or a ratio of .47, accepted admission. Finally, 77 students, or a ratio of .78, who had accepted admission, ultimately enrolled.

Comparing the relationship of enrolled-to-admitted students within this SAT score interval, one can see that admitted students enrolled at a ratio of .36. This compares with an admit-to-enrollment ratio of .47 for students located in the 400-445 SAT score, as an illustration.

It is evident from the data displayed in this table that the 400-445 SAT range represented the model interval at all four admissions stages.

Differences obtained in the value of the mean SAT score for all intervals, shown in the bottom row, indicates shifts

in SAT score distribution from stage to stage. These shifts are evident in the stage-to-stage patterns of continuation ratios. For example, the ratios for admitted students increase from .18 to 1.00 with increasing SAT score intervals. Enrollment-to-admit ratios, on the other hand, decrease from 1.00 to .50.

The continuation ratios in the admit column are a result of institutional selectivity and indicate that applicants with higher SAT scores are much more likely to be admitted than admissions candidates with lower scores.

The enroll/admit ratios, which are shown in the last column, are a result, on the other hand, of selectivity on the part of admitted applicants. Analysis of the data for the selected college which are contained is this column shows that admitted students with higher SAT scores are less likely to enroll than students with lower scores.

In summary, as shown in Table 1, the stage-to-stage model provides for the production of appropriate numerical counts and continuation ratios. The modulation of students through the stages or milestones of the admissions system can thus be tracked with a high degree of precision.

Utility for admissions. As provided in the model, systematic monitoring of data at various stages of the admissions process can enable an institution to accurately identify the changes which occur in the applicant pool between initial application and final enrollment. Knowledge of these changes can greatly assist college planning and recruitment efforts

by identifying students who are the most and the least likely to proceed toward enrollment.

Data provided in Table 1 contains information which a college's admissions office can use to develop specialized programs to improve its continuation ratios within the stages of the admissions system.

For example, assuming an institutional goal of high SAT scores for enrolled students, an admissions office using information provided through the model, can focus appropriate follow-up programs to maximize the enrollment yield of applicant students in, as an illustration, the 500-545 SAT score interval.

Through the use of personalized letters, phone-a-thons, and other direct contact programs carried out between the institution and students located in the targeted SAT interval, the admissions office could improve its continuation ratios and thereby move closer to reaching the institution's goal of "high" SAT scores.

If, as an illustration, the institution were able to improve its enrollment/admit ratio of students in the 500-545 interval from .36 to 1.00, the resulting effect would be a 13 point increase in the institution's overall SAT average for new freshmen. The institution's mean SAT score would move from 429 to 442--a 3 percent increase in average scores. The increase would be accomplished through a leveraging of the admit pools and would not be dependent upon the recruitment of more applicants in the SAT interval.

Tables 2 and 3 provide further illustration of how the stage-to-stage model can provide admissions offices with a focus for leveraging the admissions system to realize institutional enrollment goals.

By improving the continuation ratios shown in Table 2 for enrolled freshmen who indicated a major in arts, an institution could realize a (possible) goal of increasing the proportion of its freshmen who enroll as majors in this discipline category. For example, through the use of direct contact programs specially targeted for admitted students who indicated an intent to major in the arts field of study, a college could strive to improve its enrollment-to-admit ratios from .52 to 1.00. This improvement in continuation ratios would result in a doubling of the proportion of freshmen in this field of study.

Similarly, using the illustration provided in Table 3, County of Origin Data, a college could utilize the model as a focus of improving continuation ratios for, say, out-of-state students. An improvement in the enroll-to-admit ratio, from .40 to 1.00, would effect a 150 percent increase in the proportion of the college's out-of-state freshmen students.

Summary

A four stage model of college admissions systems has been described. A methodology was proposed for utilizing the model to monitor applicants at each stage of the admissions process as an aid in planning and recruitment.

Several examples have been provided which demonstrate the model's broad applicability for the development of specialized admissions programs which could be targeted to accomplish institutional goals such as increasing overall SAT scores, raising enrollments in major fields of study, and improving out-of-state enrollments.

Table 1
Admissions System: Stage-tc Stage Model
50 Point Intervals
Fall 1980
First-Time/Full-Time Freshmen

Av. Score Intervals	Apply #	Admit #	Admit %	Accept #	Accept %	Enroll #	Enroll %	En/Admit %
200-245	33	6	.18	6	1.00	6	1.00	1.00
250-295	165	37	.22	25	.68	23	.92	.62
300-345	316	97	.31	60	.62	48	.80	.49
350-395	563	360	.64	213	.59	178	.84	.49
400-445	615	532	.87	305	.57	248	.81	.47
450-495	475	418	.88	222	.53	180	.81	.43
500-545	231	211	.91	99	.47	77	.78	.36
500-595	86	77	.90	43	.56	36	.84	.47
600-645	17	14	.82	7	.50	5	.71	.36
650-695	4	4	1.00	2	.50	2	1.00	.50
Total	2505	1756	.70	982	.56	803	.82	.46
Mean	411	435		430		429		

Note: Data are provided for illustrative purposes only and do not necessarily reflect the actual information generated for the institution through the model.

Table 2
Admissions System: Stage-to-Stage Model
Intended Majors
Fall 1980
First-Time/Full-Time Freshmen

	Apply #	Admit #	Admit %	Accept #	Accept %	Enroll #	Enroll %	En/Admit %
Arts	180	117	.65	70	.60	56	.80	.48
Arts	131	84	.64	52	.62	44	.85	.52
Hist	15	13	.87	8	.62	6	.75	.46
Litt	31	18	.58	9	.50	5	.55	.28
Phil	3	2	.67	1	.50	1	1.00	.50
Sciences	376	292	.78	163	.56	136	.83	.47
Biol	79	58	.73	28	.48	24	.86	.41
Chem	13	11	.85	4	.36	3	.75	.27
Envl	150	112	.75	68	.61	56	.82	.50
Mars	96	78	.81	44	.56	37	.84	.47
Math	26	22	.85	13	.59	11	.85	.50
Phys	7	6	.86	2	.33	2	1.00	.33
Geol	5	5	1.00	4	.80	3	.75	.60
Professional	730	504	.69	276	.55	226	.82	.45
Bsns	588	390	.66	207	.53	170	.82	.44
Info	96	83	.86	55	.66	43	.78	.52
Bmco	16	12	.75	4	.33	4	1.00	.33
Spad	24	18	.75	10	.55	9	.90	.50
PubH	6	1	.17					
Social	319	224	.70	117	.52	93	.79	.42
Crim	99	68	.69	36	.53	31	.86	.46
Econ	10	8	.80	3	.38	2	.67	.25
Pols	35	26	.74	15	.58	11	.73	.42
Psyc	91	67	.74	32	.48	25	.78	.37
Socy	12	9	.75	4	.44	3	.75	.33
Sowk	72	46	.64	27	.59	21	.78	.46
Undecided	900	619	.69	356	.58	292	.82	.47
Total	2505	1756	.70	982	.56	803	.82	.46

Note: Data are provided for illustrative purposes only and do not necessarily reflect the actual information generated for the institution through the model.

Table 3
Admissions System: Stage-to-Stage Model
County of Origin
Fall 1980
First-Time/Full-Time Freshmen

	Apply	Admit		Paid		Enroll		En/Admit
	#	#	%	#	%	#	%	%
Atlantic	181	137	.76	97	.71	77	.79	.56
Bergen	294	202	.69	93	.46	79	.85	.39
Burlington	168	122	.73	78	.64	69	.88	.57
Camden	178	123	.69	71	.58	58	.82	.47
Cape May	84	58	.69	43	.74	35	.81	.60
Cumberland	60	47	.78	24	.51	19	.79	.40
Essex	176	96	.55	40	.42	40	1.00	.42
Gloucester	55	41	.75	21	.51	20	.95	.49
Hudson	48	28	.58	13	.46	8	.62	.29
Hunterdon	22	15	.68	6	.40	4	.67	.27
Mercer	63	41	.65	23	.56	16	.70	.39
Middlesex	195	144	.74	72	.50	58	.81	.40
Monmouth	261	187	.72	109	.58	88	.81	.47
Morris	112	86	.77	38	.44	28	.74	.33
Ocean	196	139	.71	98	.71	82	.84	.59
Passaic	87	70	.80	35	.50	31	.89	.44
Salem	13	8	.62	4	.50	3	.75	.38
Somerset	83	59	.71	30	.51	23	.77	.39
Sussex	28	21	.75	13	.62	11	.85	.52
Union	75	46	.61	24	.52	20	.83	.43
Warren	17	11	.65	6	.55	6	1.00	.55
Out of State	68	50	.74	25	.50	20	.80	.40
Foreign	23	18	.78	12	.67	8	.67	.44
Total	2487	1749	.70	975	.56	803	.82	.46

Note: Data are provided for illustrative purposes only and do not necessarily reflect the actual information generated for the institution through the model.

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